

CLAIMS:

What is claimed is:

- SuBA*

 1. A system for decreasing latency of destination address resolution of packets at a network node comprising:
 2. an aggregation utility, for aggregating multiple addresses hosted on said network node into a single representative maskaddress; and
 3. an address resolution utility for determining destination addresses of said packets using said maskaddress.
 4. The system of Claim 1, wherein said multiple addresses contain at least a single most significant bit in common to create a definable address space of consecutive addresses, wherein said mask address has a prefix variable which indicates the number of relevant bits within the consecutive addresses to be utilized within said maskaddress.
 5. The system of claim 2, wherein said aggregation utility comprises:
 6. means for determining which of said consecutive addresses are present within said node;
 7. means for creating said maskaddress and prefix when at least two of said consecutive addresses are present within said node.
 8. The system of Claim 3, wherein said determining means utilizes a percent aggregation rule.
 9. The system of Claim 4, further comprising:
 10. a negative address utility for determining which addresses from within said space are not present on said

4 network node, wherein a resulting negative address is
5 utilized along with said mask address to efficiently select
6 packets with destination address which are located on said
7 network node.

1 6. The system of claim 5, wherein said negative address
2 utility comprises:

3 means for determining whether a particular percentage
4 of said consecutive addresses are present within said node;
5 means for creating said negative address when said
6 particular percentage of consecutive addresses is present in
7 said subspace.

1 7. The system of Claim 1, wherein said address resolution
2 utility includes a comparison utility for comparing said
3 destination address with said mask address.

1 8. A method for efficient determination of the correct
2 destination of a packet on a network, said method comprising
3 the steps of:

4 dynamically creating a maskaddress with a prefix to
5 represent a plurality of consecutive IP addresses located at
6 a node;

7 comparing a destination address of said packet with
8 said maskaddress to determine if said destination address is
9 similar to said maskaddress; and

10 accepting said packet at said node when a match exists
11 between said destination address and said maskaddresses.

1 9. The method of claim 8, wherein said creating step
2 further includes the steps of:

3 determining when said node contains at least two
4 consecutive addresses, wherein a particular number of
5 possible consecutive addresses represents an address space;
6 and

7 aggregating, in response to said determining step, said
8 addresses within said address space to create a single
9 representative maskaddress.

1 10. The method of Claim 9, wherein said aggregating step
2 represents said aggregated addresses as a mask address
3 having an associated space variable and a prefix variable,
4 said space variable indicating a number of addresses within
5 said space, and said prefix variable indicating a number of
6 relevant bits to be utilized for comparisons with a
7 destination address of a packet on said network, whereby
8 input time for processing packets traveling on the network
9 is reduced.

1 11. The method of Claim 9, wherein said aggregating step
2 further includes the steps of completing a percent
3 aggregation of said consecutive addresses within said space
4 which are present on said node.

1 12. The method of claim 9, wherein said aggregating step
2 further includes the steps of:
3 analyzing whether said space has missing addresses; and
4 in response to a determination that said space has
5 missing addresses, generating a negative address
6 representing said missing addresses, wherein said negative
7 address is utilized along with said maskaddress to determine
8 if a particular destination address is on said node once
9 said maskaddress matches said destination address of said
10 package.

1 13. The method of claim 9, wherein said comparing step
2 includes the steps of:
3 checking said destination address against said negative
4 address; and
5 rejecting said packet when said destination address
6 matches said negative address.

1 14. A computer program product for effectively decreasing
2 time for destination address resolution of packets at a
3 network node, said program product comprising:

4 a computer readable medium; and
5 program instructions on said computer readable medium
6 for:

7 an aggregation utility, for aggregating multiple
8 addresses hosted on said network node into a single
9 representative maskaddress; and

10 an address resolution utility for determining
11 destination addresses of said packets using said
12 maskaddress.

1 15. The computer program product of Claim 14, wherein said
2 program instructions for said aggregating utility comprises
3 program instructions for:

4 creating said maskaddress when said multiple addresses
5 contain at least a single most significant bit in common to
6 create a definable address space of consecutive addresses;
7 and

8 determining a prefix value for said maskaddress that
9 indicates the number of relevant bits within the consecutive
10 addresses to be utilized within said maskaddress

1 16. The computer program product of Claim 15, further
2 comprising program instructions for utilizing a percent
3 aggregation rule to create said maskaddress.

1 17. The computer program product of Claim 16, further
2 comprising program instructions for:

3 a negative address utility for determining which
4 addresses from within said space are not present on said
5 network node, wherein a resulting negative address is

6 utilized along with said mask address to efficiently select
7 packets with destination address which are located on said
8 network node.

1 18. The computer program product of Claim 17, wherein said
2 program instructions for said negative address utility
3 includes program instructions for:

4 determining whether a particular percentage of said
5 consecutive addresses are present within said node;

6 creating said negative address when said particular
7 percentage of consecutive addresses is present in said
8 subspace.

1 19. The program product claims of Claim 18, wherein said
2 program instructions for said address resolution utility
3 includes program instructions for a comparison utility for
4 comparing said destination address with said maskaddress.

1 20. The computer program product of Claim 15, wherein said
2 program instructions for said percent aggregation rule
3 utilizes a 75 percent aggregation rule.